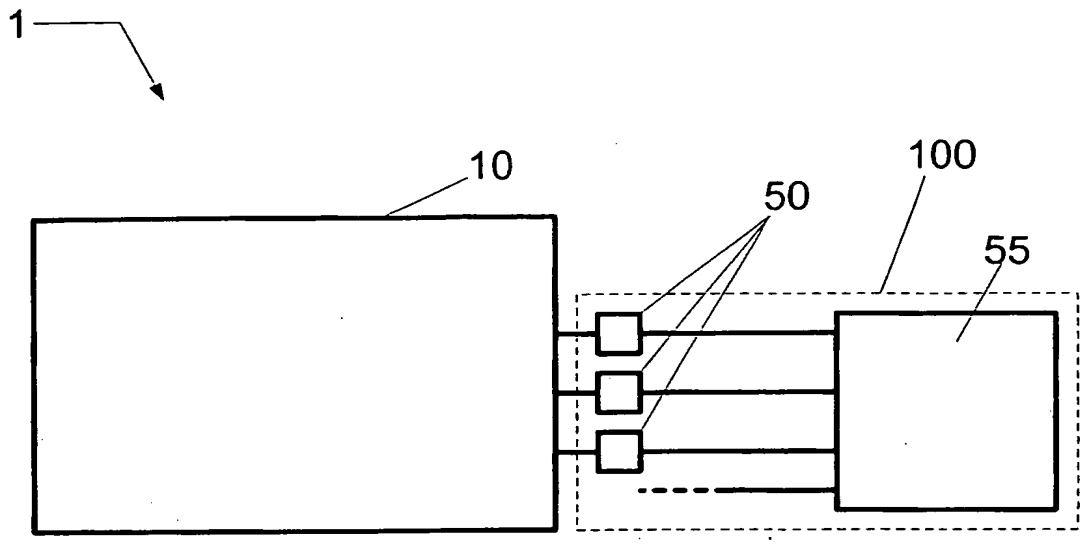

FIG. 1.

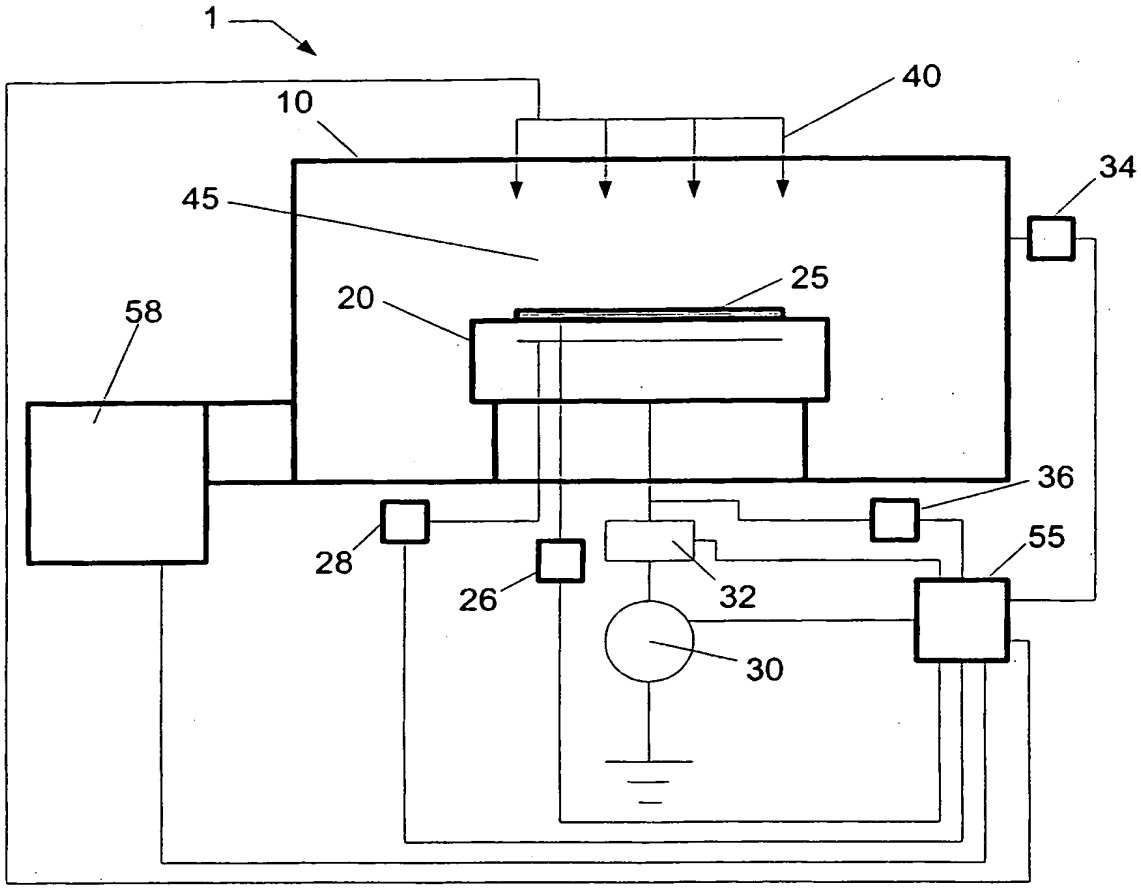

FIG. 2.

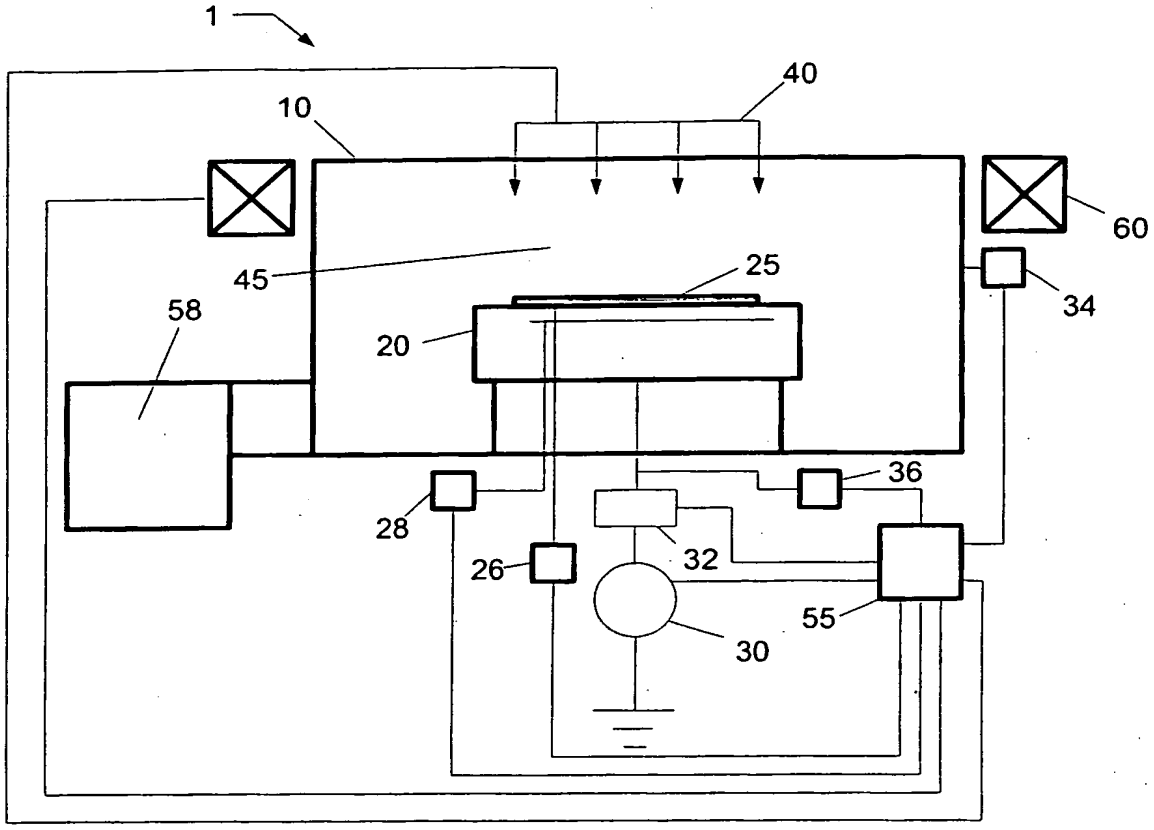

FIG. 3.

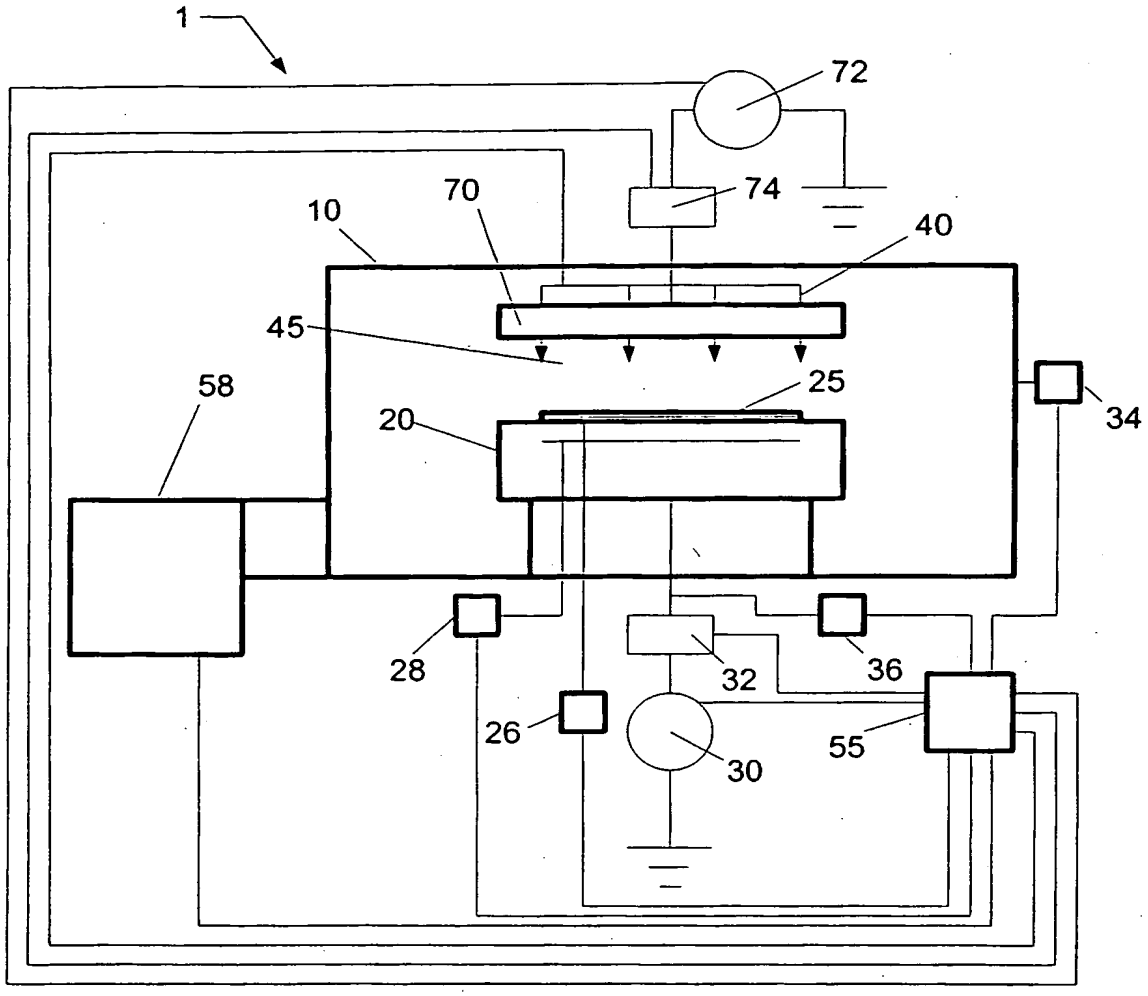

FIG. 4.

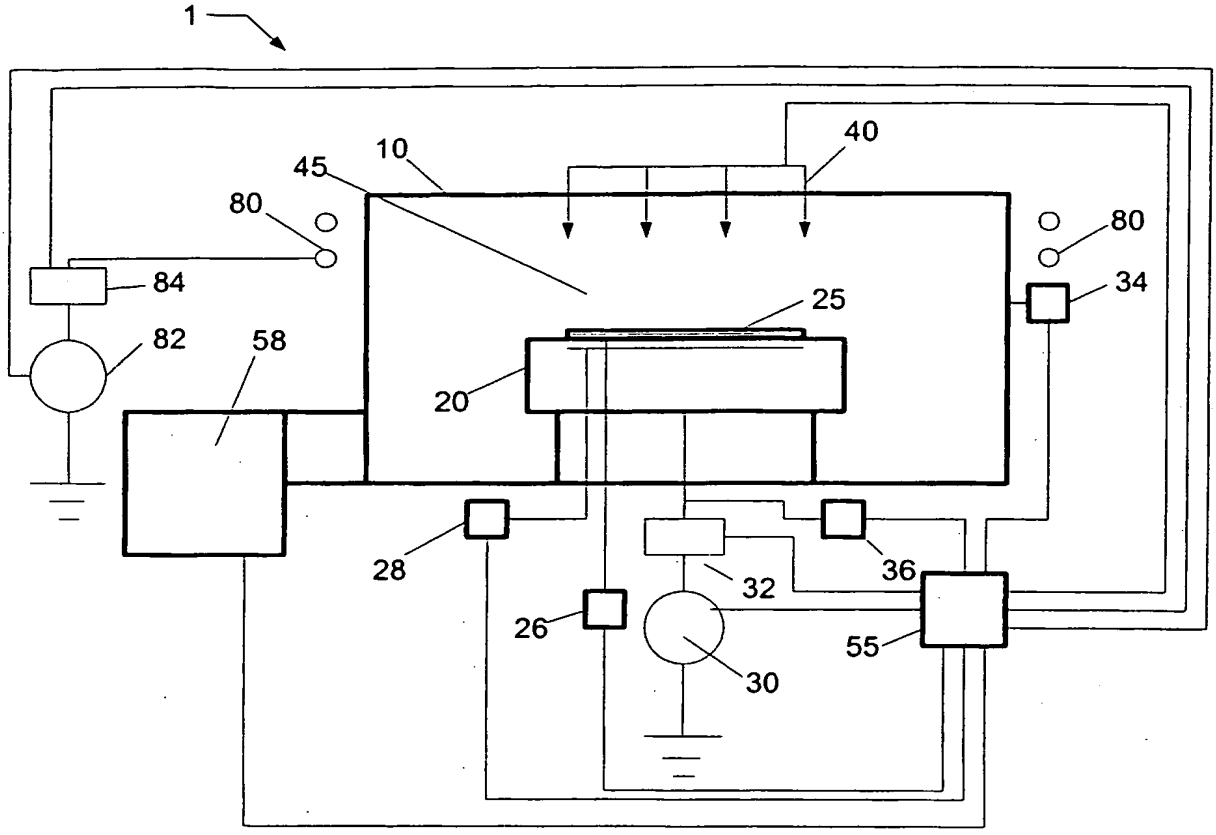

FIG. 5.

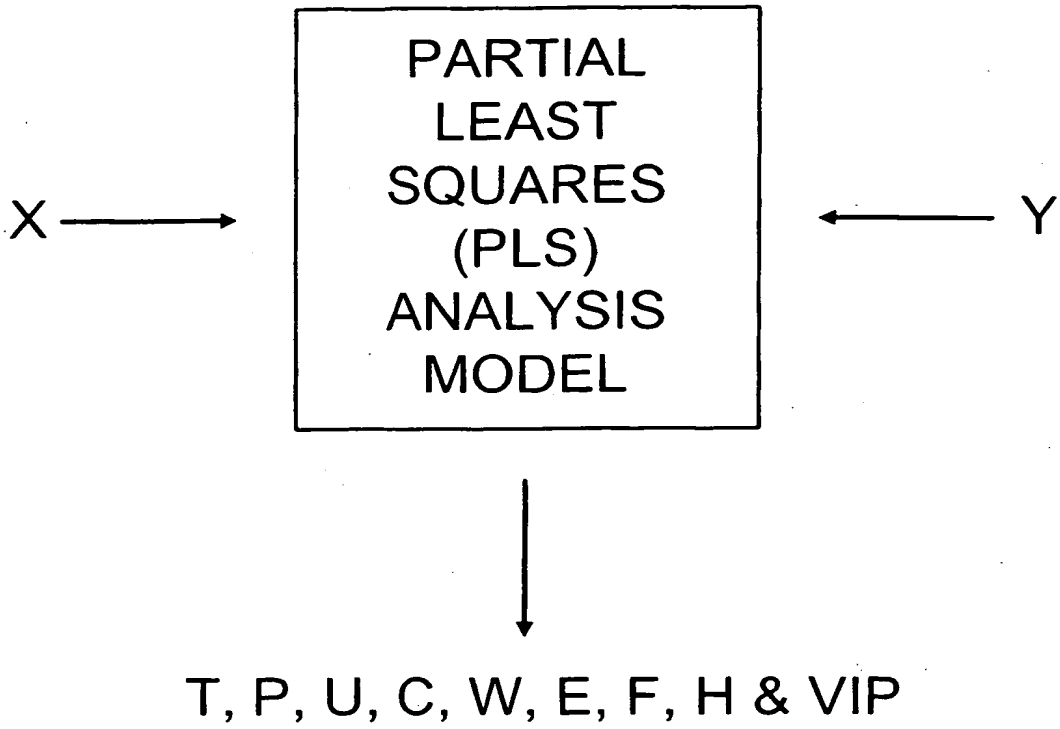

FIG. 6.

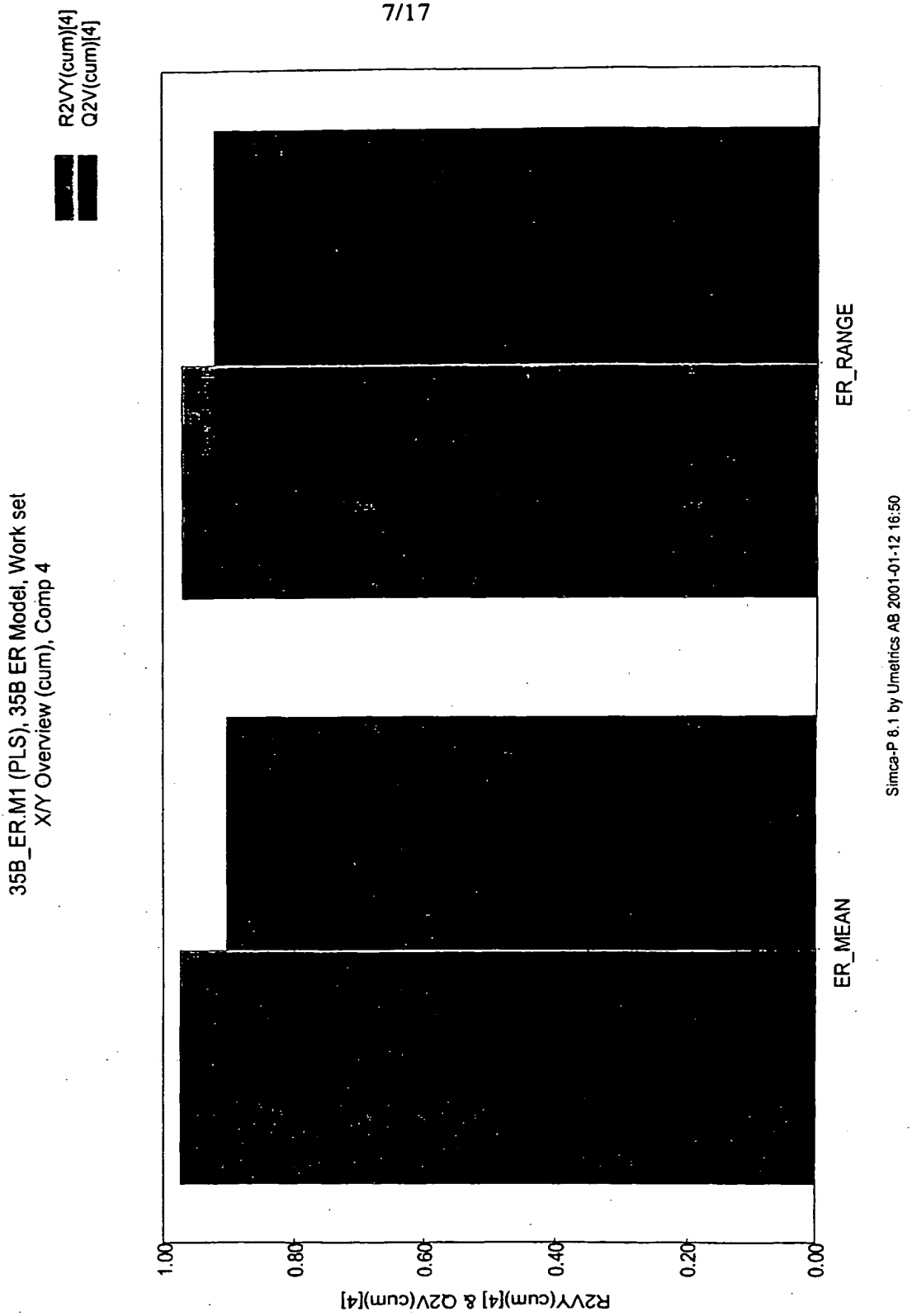
R2VY(cum)[4]
Q2V(cum)[4]
35B_ER.M1 (PLS), 35B ER Model, Work set
X/Y Overview (cum), Comp 4
ER_RANGE
ER_MEAN
1.00
0.80
0.60
0.40
0.20
0.00
R2VY(cum)[4] & Q2V(cum)[4]
Simca-P 8.1 by Umetrics AB 2001-01-12 16:50

FIG. 7.

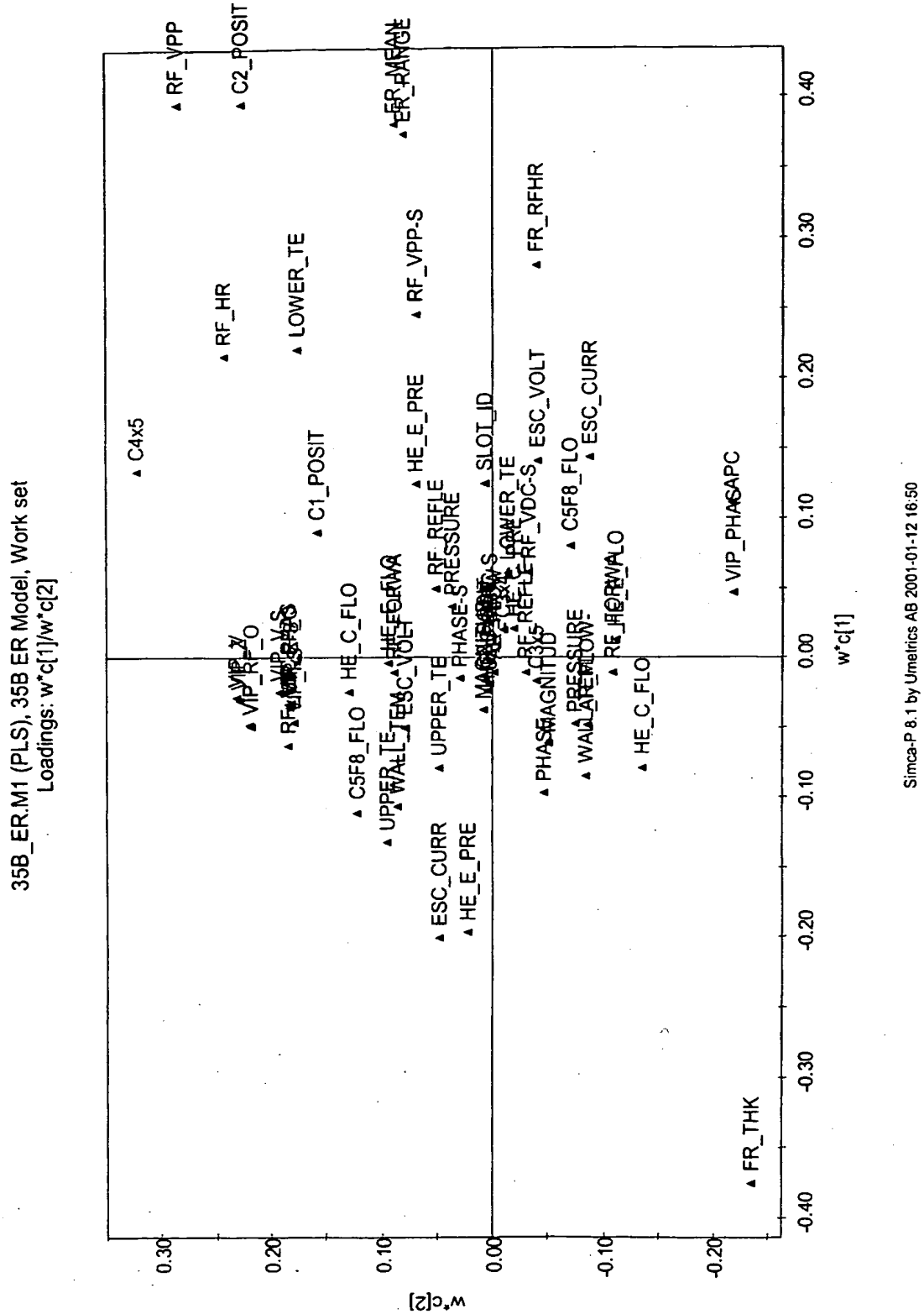
35B_ER.M1 (PLS), 35B ER Model, Work set
Loadings: w*c[1]/w*c[2]
RF_VPP
C2_POSIT
ER_MEAN
ER_RANGE
C4x5
RF_HR
LOWER_TE
RF_VPP-S
FR_RFHR
HE_E_PRE
SLOT_ID
ESC_VOLT
ESC_CURR
C1_POSIT
C5F8_FLO
RF_REFLE
PRESSURE
HE_C_FLO
UPPER_TE
PHASE-S
VIP_PHASE
FR_THK
w*c[1]
w*c[2]
Simca-P 8.1 by Umetrics AB 2001-01-12 16:50

FIG. 8.

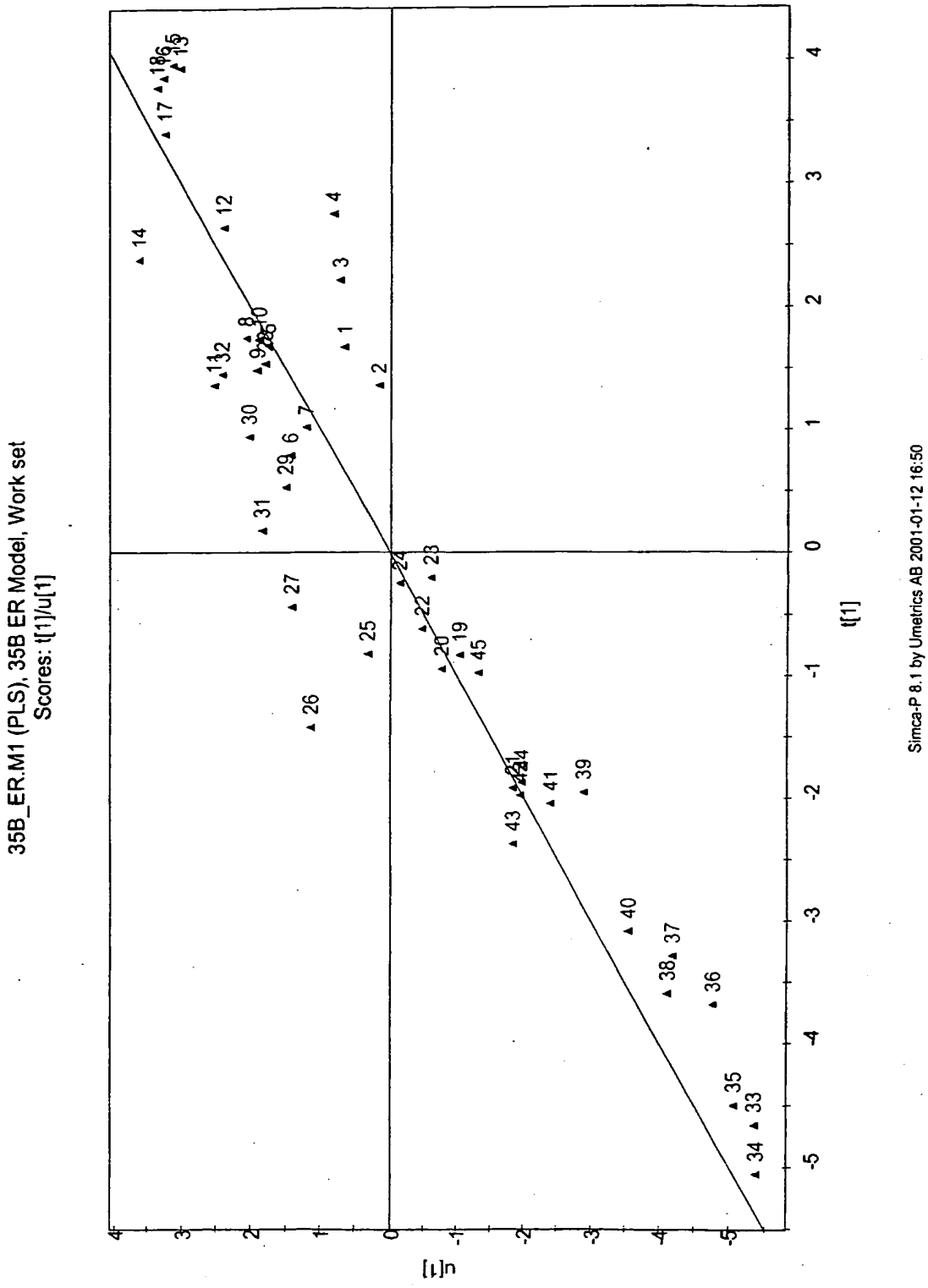
35B_ER.M1 (PLS), 35B ER Model, Work set
Scores: t[1]/u[1]
u[1]
t[1]
Simca-P 8.1 by Umetrics AB 2001-01-12 16:50

FIG. 9.

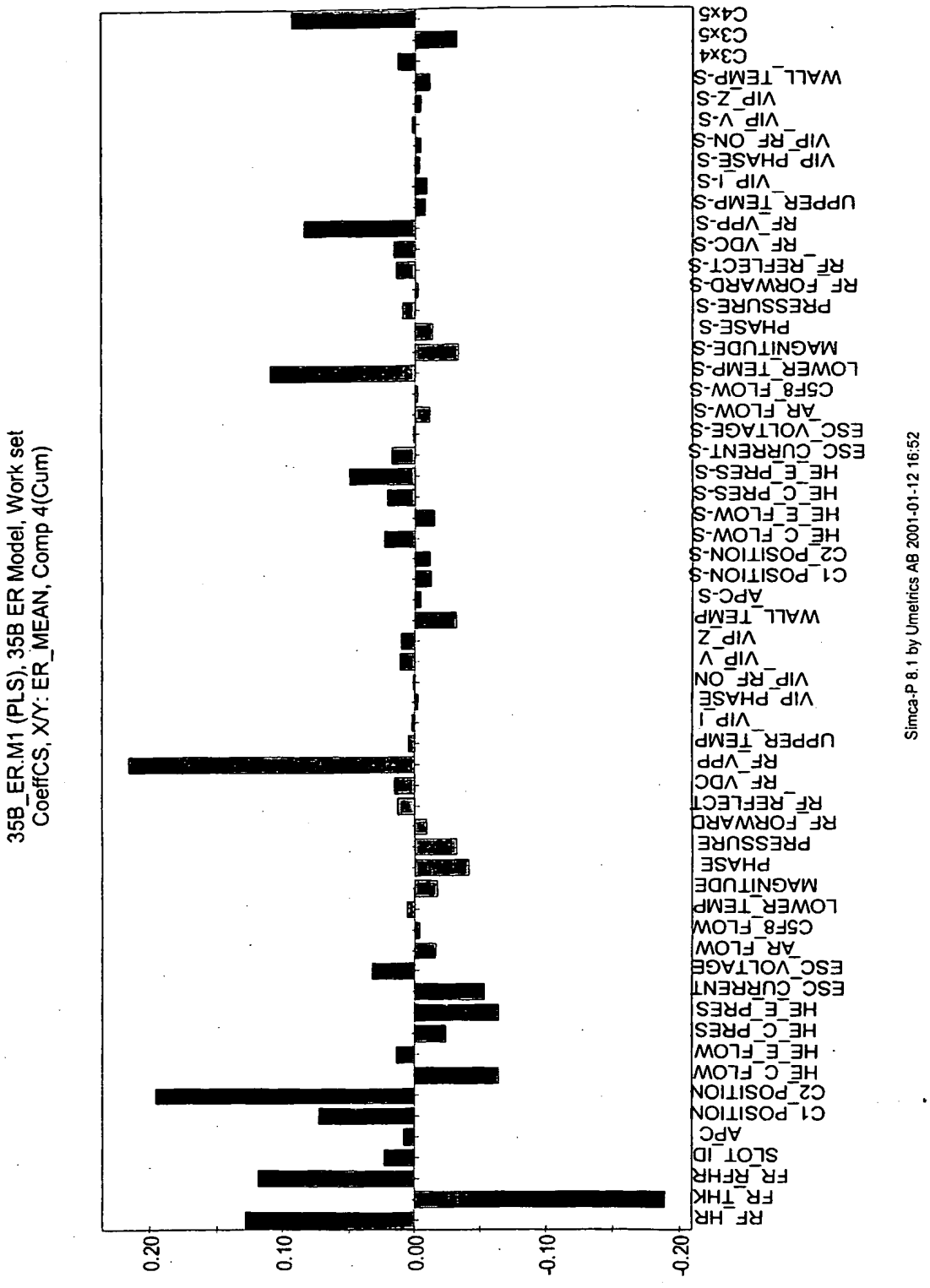
35B_ER.M1 (PLS), 35B ER Model, Work set
CoeffCS, X/Y: ER_MEAN, Comp 4(Cum)
RF_HR
FR_THK
FR_RFHR
SLOT_ID
APC
C1_POSITION
C2_POSITION
HE_C_FLOW
HE_E_FLOW
HE_C_PRES
HE_E_PRES
ESC_CURRENT
ESC_VOLTAGE
AR_FLOW
C5F8_FLOW
LOWER_TEMP
MAGNITUDE
PHASE
PRESSURE
RF_FORWARD
RF_REFLECT
RF_VDC
RF_VPP
UPPER_TEMP
VIP_I
VIP_PHASE
VIP_RF_ON
VIP_V
VIP_Z
WALL_TEMP
APC-S
C1_POSITION-S
C2_POSITION-S
HE_C_FLOW-S
HE_E_FLOW-S
HE_C_PRES-S
HE_E_PRES-S
ESC_CURRENT-S
ESC_VOLTAGE-S
AR_FLOW-S
C5F8_FLOW-S
LOWER_TEMP-S
MAGNITUDE-S
PHASE-S
PRESSURE-S
RF_FORWARD-S
RF_REFLECT-S
RF_VDC-S
RF_VPP-S
UPPER_TEMP-S
VIP_I-S
VIP_PHASE-S
VIP_RF_ON-S
VIP_V-S
VIP_Z-S
WALL_TEMP-S
C3x4
C3x5
C4x5
0.20
0.10
0.00
-0.10
-0.20
Simca-P 8.1 by Umetrics AB 2001-01-12 16:52

FIG. 10.

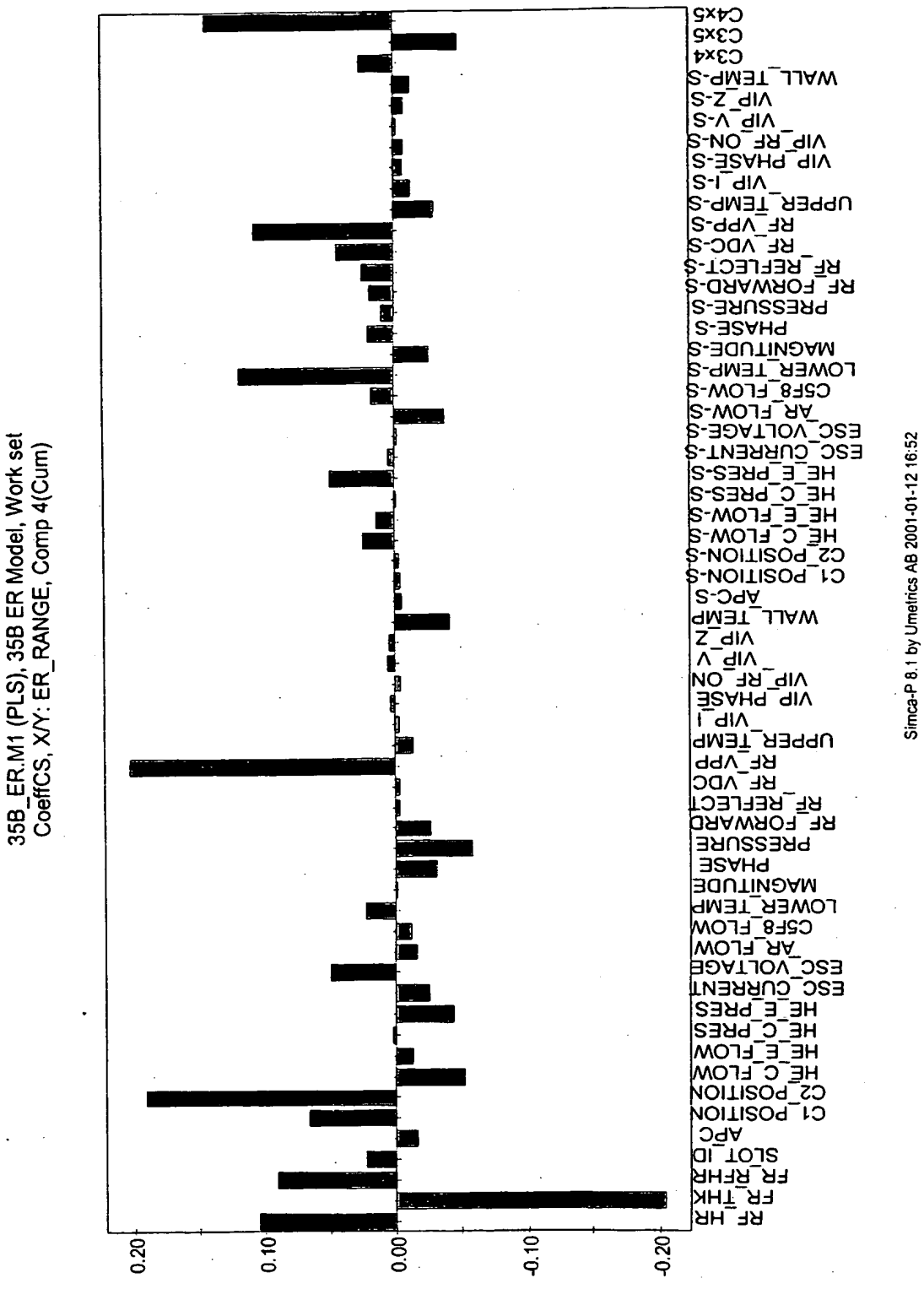
35B_ER.M1 (PLS), 35B ER Model, Work set
CoeffCS, X/Y: ER_RANGE, Comp 4(Cum)
RF_HR
FR_THK
FR_RFHR
SLOT_ID
APC
C1_POSITION
C2_POSITION
HE_C_FLOW
HE_E_FLOW
HE_C_PRES
HE_E_PRES
ESC_CURRENT
ESC_VOLTAGE
AR_FLOW
C5F8_FLOW
LOWER_TEMP
MAGNITUDE
PHASE
PRESSURE
RF_FORWARD
RF_REFLECT
RF_VDC
RF_VPP
UPPER_TEMP
VIP_I
VIP_PHASE
VIP_RF_ON
VIP_V
VIP_Z
WALL_TEMP
APC-S
C1_POSITION-S
C2_POSITION-S
HE_C_FLOW-S
HE_E_FLOW-S
HE_C_PRES-S
HE_E_PRES-S
ESC_CURRENT-S
ESC_VOLTAGE-S
AR_FLOW-S
C5F8_FLOW-S
LOWER_TEMP-S
MAGNITUDE-S
PHASE-S
PRESSURE-S
RF_FORWARD-S
RF_REFLECT-S
RF_VDC-S
RF_VPP-S
UPPER_TEMP-S
VIP_I-S
VIP_PHASE-S
VIP_RF_ON-S
VIP_V-S
VIP_Z-S
WALL_TEMP-S
C3x4
C3x5
C4x5
0.20
0.10
0.00
-0.10
-0.20
Simca-P 8.1 by Umetrics AB 2001-01-12 16:52

FIG. 11.

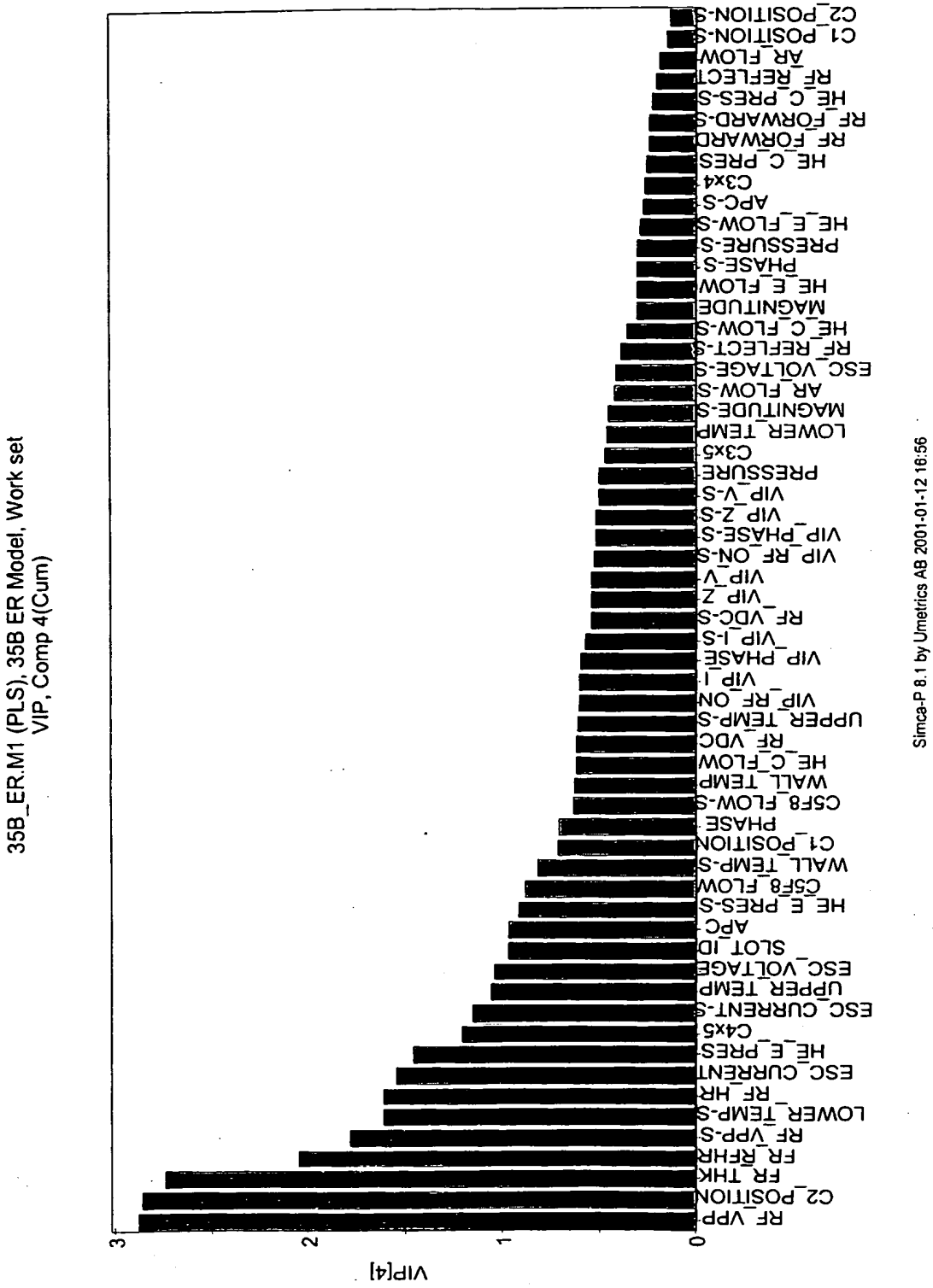
35B_ER.M1 (PLS), 35B ER Model, Work set
VIP, Comp 4(Cum)
VIP[4]
0
1
2
3
RF_VPP
C2_POSITION
FR_THK
FR_RFHR
RF_VPP-S
LOWER_TEMP-S
_RF_HR
ESC_CURRENT
HE_E_PRES
_C4x5
ESC_CURRENT-S
UPPER_TEMP
ESC_VOLTAGE
SLOT_ID
APC
HE_E_PRES-S
C5F8_FLOW
WALL_TEMP-S
C1_POSITION
PHASE
C5F8_FLOW-S
WALL_TEMP
HE_C_FLOW
_RF_VDC
UPPER_TEMP-S
VIP_RF_ON
VIP_I
VIP_PHASE
_VIP_I-S
RF_VDC-S
_VIP_Z
VIP_V
VIP_RF_ON-S
VIP_PHASE-S
VIP_Z-S
VIP_V-S
PRESSURE
C3x5
LOWER_TEMP
MAGNITUDE-S
AR_FLOW-S
ESC_VOLTAGE-S
RF_REFLECT-S
HE_C_FLOW-S
MAGNITUDE
HE_E_FLOW
PHASE-S
PRESSURE-S
HE_E_FLOW-S
APC-S
C3x4
HE_C_PRES
RF_FORWARD
RF_FORWARD-S
HE_C_PRES-S
RF_REFLECT
AR_FLOW
C1_POSITION-S
C2_POSITION-S
Simca-P 8.1 by Umetrics AB 2001-01-12 16:56

FIG. 12.

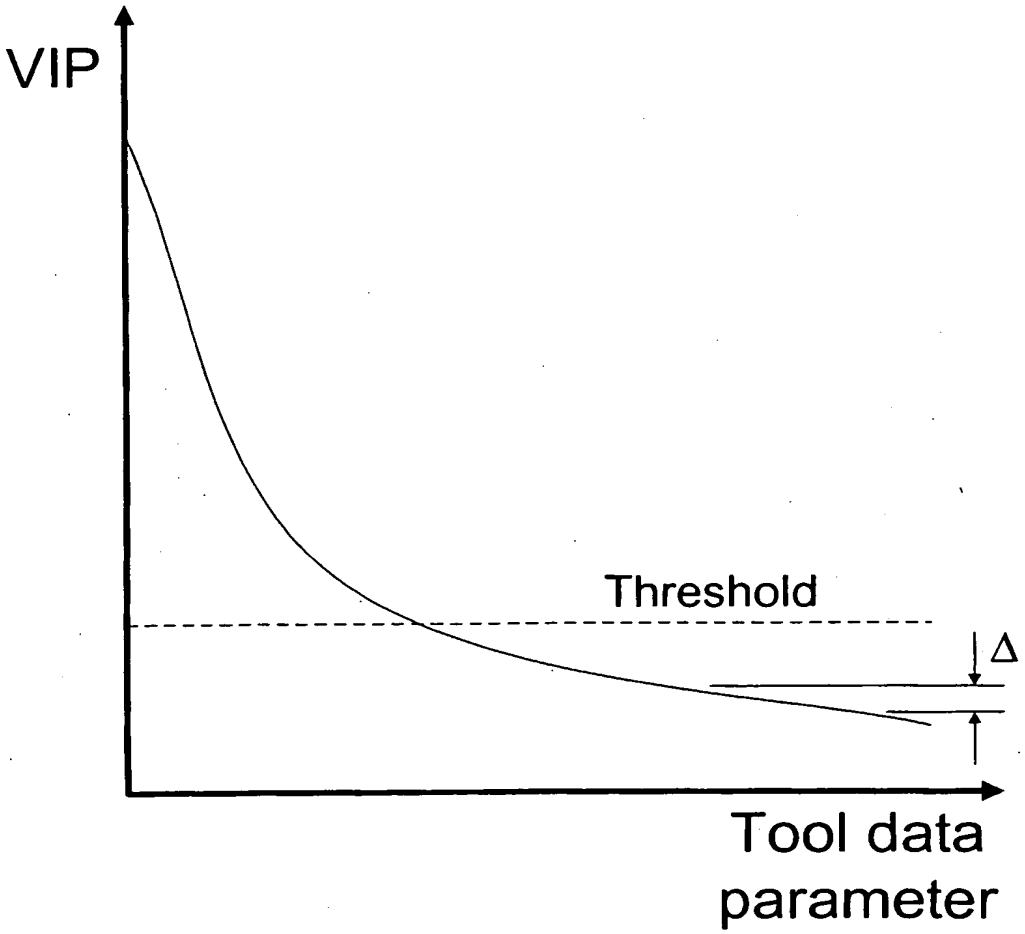

FIG. 13.

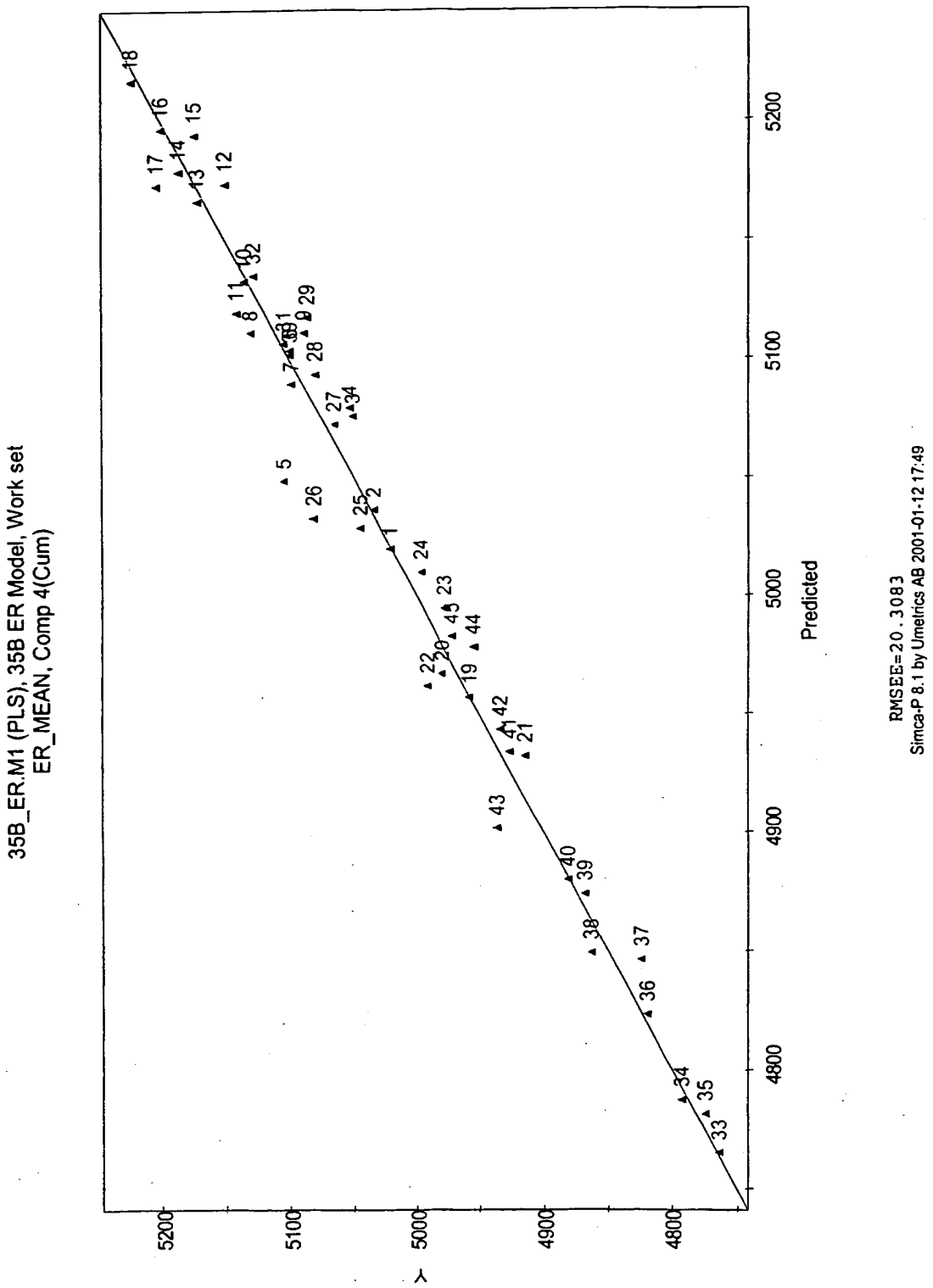
35B_ER.M1 (PLS), 35B ER Model, Work set
ER_MEAN, Comp 4(Cum)
Y
Predicted
RMSEE=20.3083
Simca-P 8.1 by Umetrics AB 2001-01-12 17:49
5200
5100
5000
4900
4800

FIG. 14.

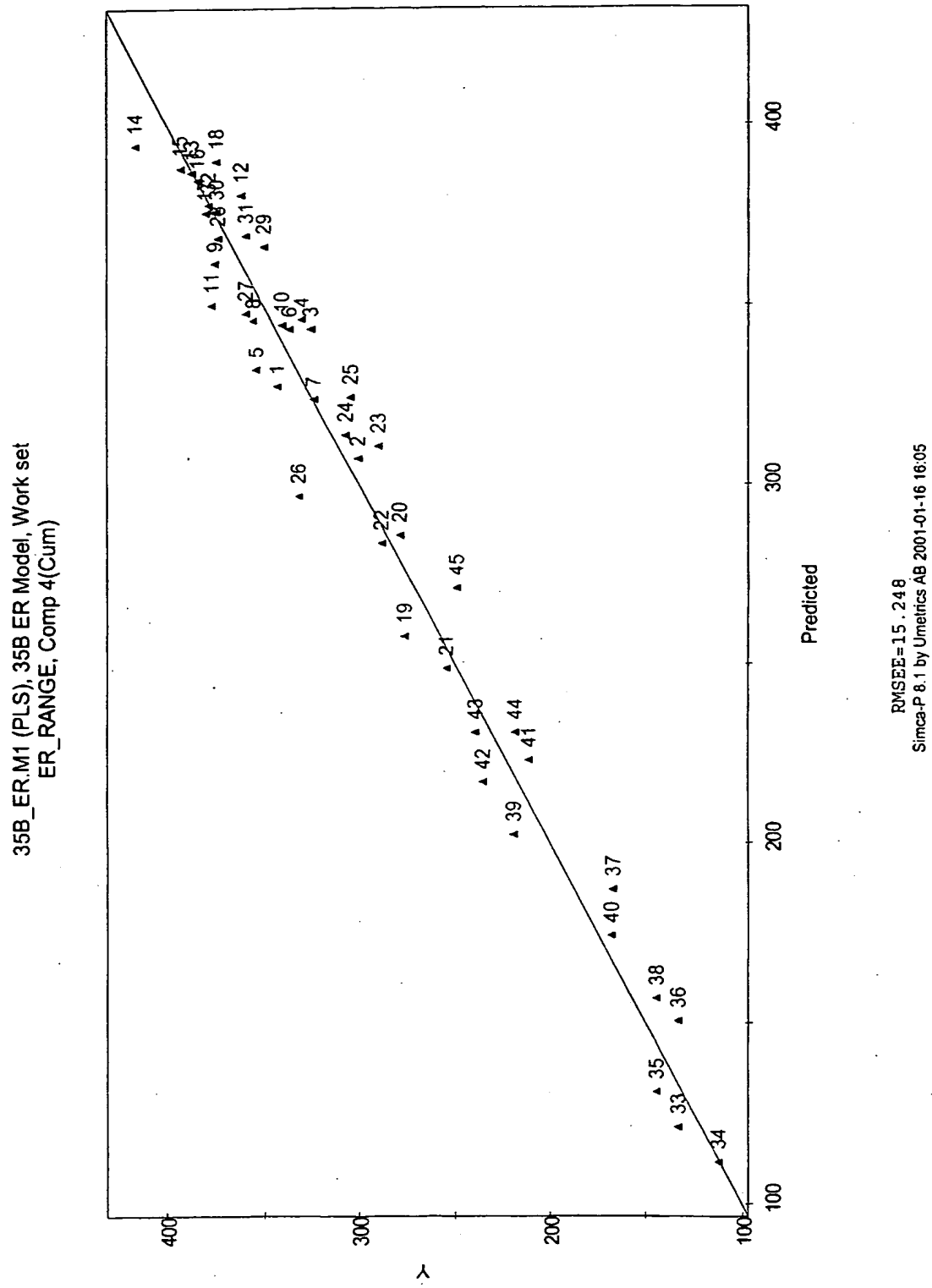
35B_ER.M1 (PLS), 35B ER Model, Work set
ER_RANGE, Comp 4(Cum)
Predicted
Y
RMSEE=15.248
Simca-P 8.1 by Umetrics AB 2001-01-16 16:05
100
200
300
400

FIG. 15.

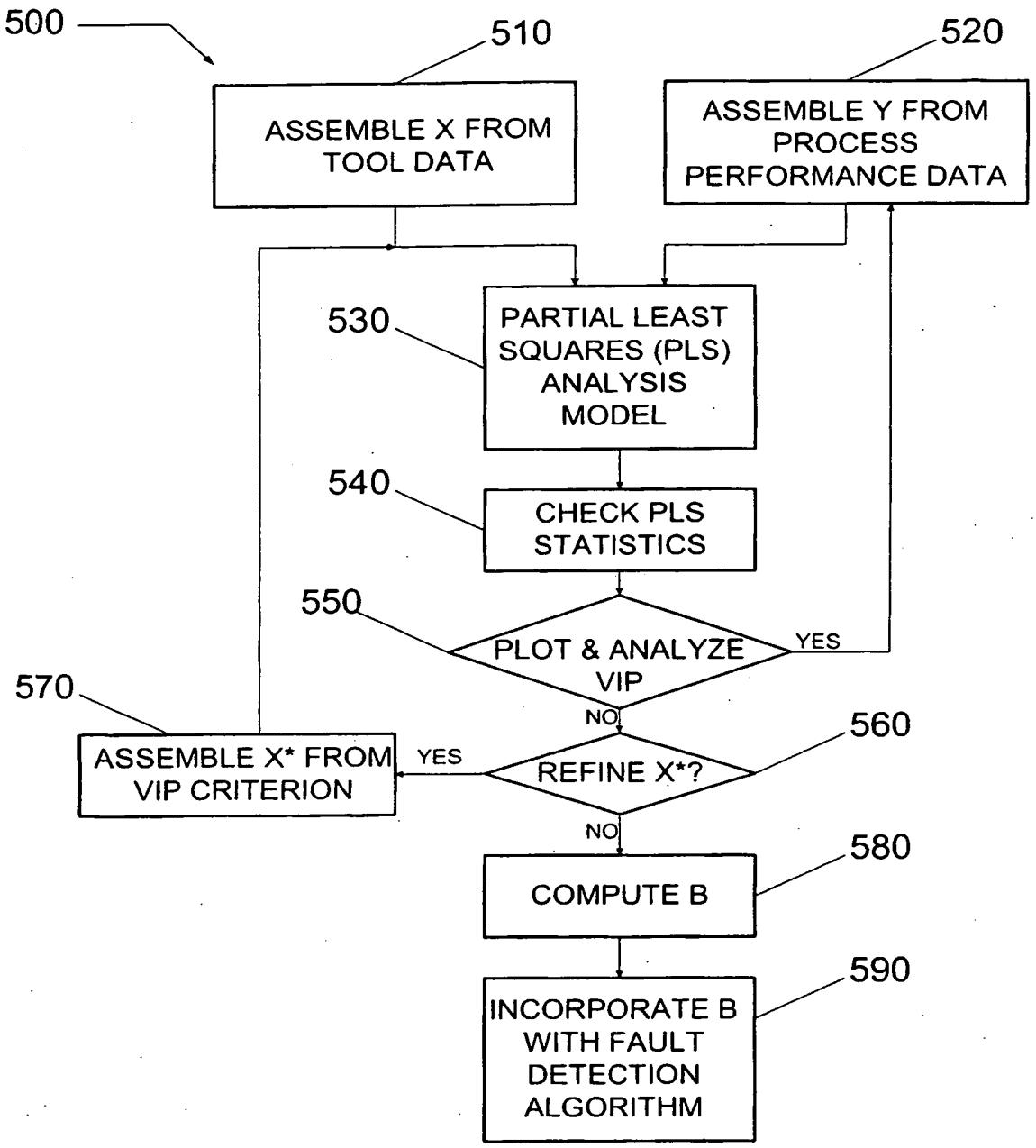
500
510
520
ASSEMBLE X FROM TOOL DATA
ASSEMBLE Y FROM PROCESS PERFORMANCE DATA
530
PARTIAL LEAST SQUARES (PLS) ANALYSIS MODEL
540
CHECK PLS STATISTICS
550
PLOT & ANALYZE VIP
YES
NO
570
ASSEMBLE X* FROM VIP CRITERION
YES
560
REFINE X*?
NO
580
COMPUTE B
590
INCORPORATE B WITH FAULT DETECTION ALGORITHM

FIG. 16.

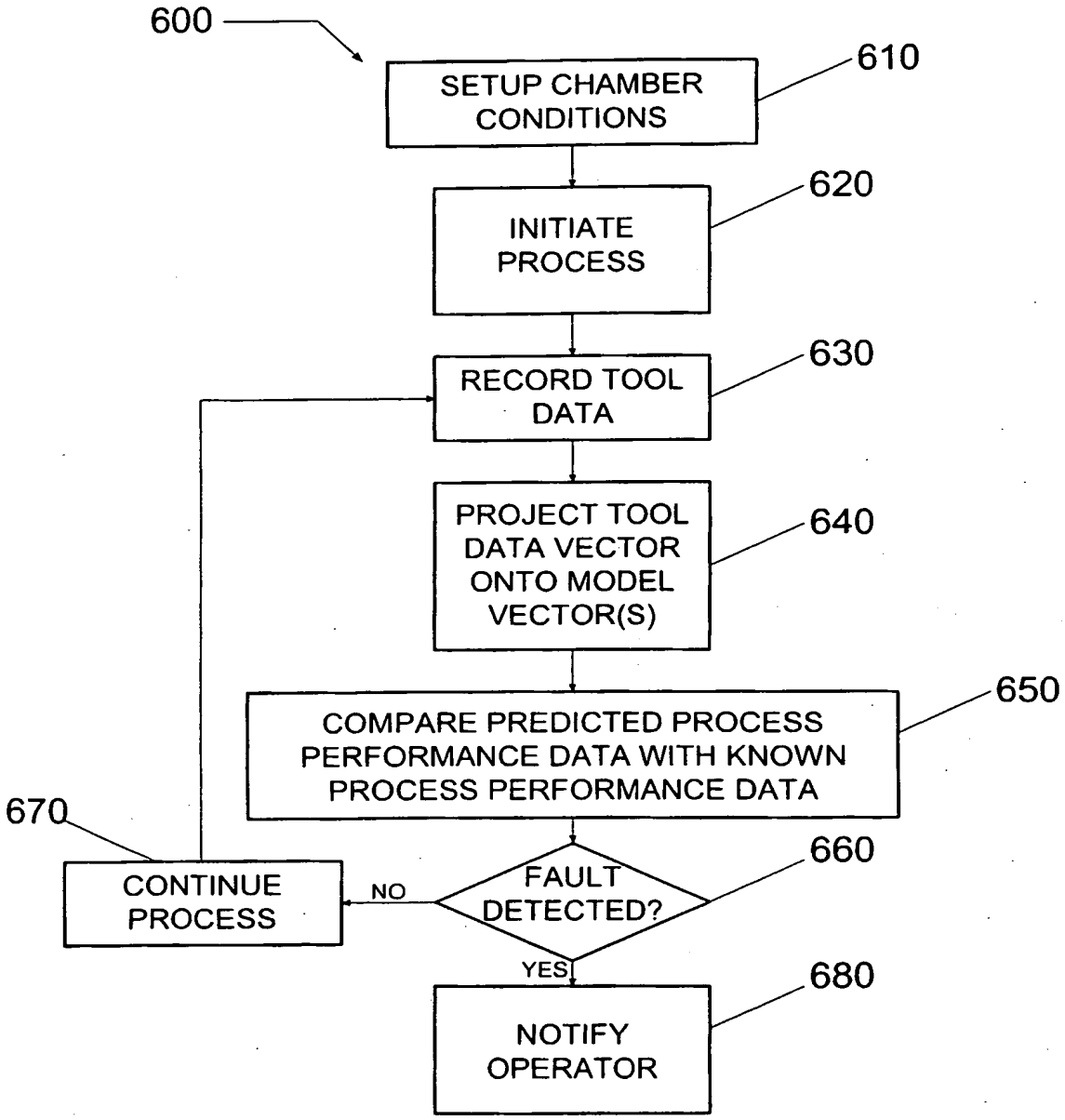
600
SETUP CHAMBER CONDITIONS
610
INITIATE PROCESS
620
RECORD TOOL DATA
630
PROJECT TOOL DATA VECTOR ONTO MODEL VECTOR(S)
640
COMPARE PREDICTED PROCESS PERFORMANCE DATA WITH KNOWN PROCESS PERFORMANCE DATA
650
FAULT DETECTED?
660
NO
CONTINUE PROCESS
670
YES
NOTIFY OPERATOR
680

FIG. 17.